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(54) Method of getting access to a home network from remote

(57) In order to allow access to a home network (5) via a first communication network (3) from remote by using a gateway (1), the gateway (1) additionally comprises connecting means (6) connecting the gateway (1) to a second communication network (7) available for the user. The user can connect himself to the gateway (1) by using the second communication network (7) and a communication device connected to the second communication network (7), thereby transferring data from

the communication device to the gateway (1) to control the gateway (1) so that a connection of the home network (5) to the first communication network (3) is established. In order that the gateway (1) establishes a connection between the home network (5) and the first communication network (3), the transferred data preferably includes a corresponding command and/or authentication information. Thus, it is possible to establish a connection on demand, which lowers security risks and costs.

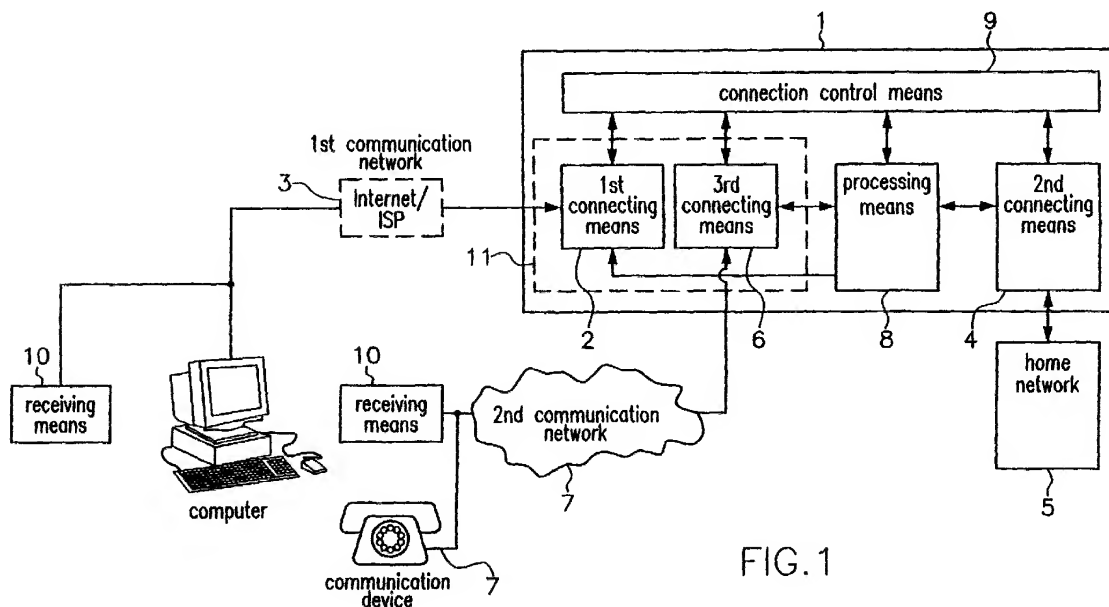


FIG.1

Description

[0001] The present invention pertains to a method of getting access to a home network via an existing communication network, the home network and the communication network being connected by a gateway, and an apparatus therefore.

[0002] A commonly used method for interconnecting and controlling home devices is to use home networking. Using such a home network, it is possible that any home device controls and communicates with any other home device. Further, it is possible to control these devices from remote.

[0003] To do this, it may be desirable to use the Internet as a communication network connecting the remote user to the home network. Such a connection can be realized by a gateway as an interface between the home network and the Internet, for example.

[0004] However, in such a case, it is necessary to have the gateway permanently connected to the Internet, which is expensive and represents a security hazard.

[0005] It is an object of the present invention to provide a method of getting access to a home network, which is low in cost, and which shows a high standard of security.

[0006] To solve this object, the present invention provides a method of getting access to a home network via a first communication network, the home network and the first communication network being connected by a gateway, which is characterized by the steps of contacting the gateway by using a communication device, and thereafter establishing a connection between the home network and the first communication network via the gateway.

[0007] Further, the present invention provides a gateway for connecting a user to a home network via a first communication network available for the user, the gateway comprising a first connecting means connecting the gateway to the first communication network, and a second connecting means connecting the gateway to the home network, characterized by further comprising a third connecting means, connecting the gateway to a second communication network available for the user, processing means for processing data received by the third connecting means via the second communication network, and connection control means for establishing a connection between the home network and the first communication network via the first and the second connecting means.

[0008] Further preferred embodiments of this method and gateway according to the present invention defined in independent claims 1 and 14, respectively, are described in the respective subclaims.

[0009] An important aspect of the present invention is that the gateway is capable of establishing the connection between the home network and the first communication network itself. After the connection has been es-

tablished by the gateway, the user can use this connection in order to control home devices within the home network over the first communication network.

[0010] The advantage thereof is that it is not necessary to have a permanent connection between the home network and the first communication network via the gateway, as this connection can be established on demand. In order to cause the gateway establishing the connection between the first communication network and the home network, the user preferably uses a second communication network connected to the gateway, which may be a telephone network, for example, and a communication device connected to the second communication network. Using a second communication network has the advantage that a connection can be established even if the gateway can not be contacted in its disconnected state over the first communication network. For example, if the first communication network is constituted by a telephone network, connecting the gateway to an Internet service provider (ISP), and by the internet, connecting the ISP to the user, and if the gateway is not connected to the ISP, it is not possible for the user to contact the gateway via the first communication network. However, using the present invention, the user can cause the gateway via the second communication network dialing up to the ISP e.g. by using a gateway-built-in modem, thereby establishing a connection between the home network and the Internet.

[0011] Another advantage of the present invention is that it is possible to establish a connection between the user and the home network even if the user can not access a device like a modem or an ISDN-card for connecting to the gateway directly by using such devices, as it is possible to transfer data including commands from the communication device via the second communication network to the gateway, thereby causing the gateway to establish the connection itself. The established connection can then be used without a modem or an ISDN-card, a network card could be sufficient therefore.

[0012] The user may, for example, connect himself to the gateway via a telephone network by using a telephone as a communication device. After authentication using the key-pad of the telephone or the voice, the user can give commands to the gateway by using his voice or a key-pad, for example. This way, he can control the gateway. As it is possible to use a mobile telephone, the present invention makes it possible to control the gateway from almost every point.

[0013] Since only the gateway needs to be controlled in this way only a very restricted set of commands is necessary in comparison to controlling the entire home network.

[0014] The procedure of authenticating is an additional step which decreases the security risk. The gateway analyzes an authenticating information and the commands sent to the gateway by the second communication network by means like a touch tone analysis or a

voice recognition means, which are included in the gateway.

[0015] Alternatively, authenticating and controlling the gateway can be done by using the first communication network after the connection has been established by the gateway. In this case no commands are necessary to cause the gateway to connect to the first communication network, since this could be done automatically by the gateway after receiving an incoming call and/or the telephone number of the remote user.

[0016] In the case that the user needs information to use the established connection between the home network and the first communication network, the gateway sends this information to receiving means which is connected to the first communication network and/or to the second communication network, and which is available for the user. This makes it possible, for example, to tell the user dynamic IP addresses assigned by the ISP to the gateway, if the gateway has been dialing up to the ISP in order to use the Internet as a part of a first communication network. Thus, the user can supply the dynamic IP numbers to his communication software, thereby connecting himself over the Internet and the gateway to the home network, without dialing up to an ISP. For example, the gateway sends an e-mail over the first communication network to an e-mail box available for the user after the connection has been established or a SMS over the second communication network to a SMS enabled phone. Another possibility is to send a facsimile.

[0017] In order to prevent an unnecessary connection in the case that the connection is not used, the gateway disconnects itself automatically from the first communication network by breaking down the established connection after a predetermined period of time, if the established connection is not used within this period of time. Thus, unnecessary costs can be avoided.

[0018] Further advantages and embodiments of the present invention will be explained below in conjunction with the following drawing.

Fig. 1 is an explanatory drawing showing a preferred embodiment of a gateway in accordance with the present invention.

[0019] In the following description, a preferred embodiment of a gateway for realizing the method described above will be given.

[0020] A gateway 1 comprises a first connecting means 2 to connect the gateway to the first communication network 3, and a second connecting means 4 connecting the gateway 1 to the home network 5.

[0021] According to the present invention, the gateway further comprises a third connecting means 6, connecting the gateway 1 to a second communication network 7 which is available for the user, a processing means 8 for processing data received by the third connecting means 6 via the second communication network

7, and a connection control means 9 for establishing a connection between the home network 5 and the first communication network 3 via the first and the second connecting means 2, 4.

[0022] The processing means 8 analyzes the data received by the third connecting means 6, which is preferably linked to a telephone network 7 or by the first connecting means 2. To carry out the data analyzation, the processing means 8 preferably includes a touch tone analysis means (not shown) or a voice recognition means (not shown). The processing means 8 extracts commands or authenticating information from the received data and sends them to the connection control means 9. The connection control means 9 organizes the communication between the home network 5 and the first communication network 3 according to the received commands. For example, the connection control means 9 causes the first connecting means 2 to dial-up to an ISP. Another possibility is to send information needed to use the established connection over the first communication network 3 to a receiving means 10, which is connected to the first and/or the second communication network 3, 7.

[0023] The receiving means 10 is preferably an e-mail box, an SMS-enabled device, or a facsimile.

[0024] The first communication network 3 preferably is (or at least a part of it) the Internet, wherein the second communication network 7 preferably comprises a telephone network, for example the public telephone network, i. e. a combination of a mobile telephone network and a cable telephone network. In a preferred embodiment, the first communication network 3 comprises an ISP.

[0025] In another embodiment, the first and/or the third connecting means 2, 6 comprise a modem or an ISDN box.

[0026] The first and the third connecting means may be condensed together into one single connecting means 11 connected to only one of the communication networks 3, 7 or to both of them. The single connection means 11 preferably includes a modem or an ISDN box.

[0027] In another embodiment, the first connecting means 3 and the third connecting means 6 are linked together such in that the communication via the first and the second communication network 3, 7 can be done exclusively with one of the first connecting means 2 and the third connecting means 6.

Claims

1. Method of getting access to a home network (5) via a first communication network (3), the home network (5) and the first communication network (3) being connectable by a gateway (1), **characterized by** the following steps:

- contacting the gateway (1) by using a commu-

- nication device, and
- establishing a connection between the home network (5) and the first communication network (3) via the gateway (1).
2. Method according to claim 1, **characterized in that** the step of contacting the gateway (1) includes the step of transferring data from the communication device to the gateway (1).
 3. Method according to claim 2, **characterized in that** the step of establishing the connection between the home network (5) and the first communication network (3) is done by the gateway (1) if the transferred data includes a corresponding command.
 4. Method according to one of the preceding claims, **characterized in that** the step of contacting the gateway (1) is done by using a second communication network (7), which is preferably a telephone network.
 5. Method according to one of the claims 2 to 4, **characterized by** a step of authenticating after or during the step of establishing a connection, wherein authenticating data is transferred via the first communication network (3) to the gateway (1), the gateway (1) blocking further action if the authenticating data does not match to authorization data of the gateway (1).
 6. Method according to one of the claims 3 to 4, **characterized in that** the step of contacting the gateway (1) includes a step of authenticating by transferring authenticating data from the communication device via the second communication network (7) to the gateway (1), the gateway (1) blocking further action if the authenticating data does not match to authorization data of the gateway (1).
 7. Method according to one of the preceding claims, **characterized in that** necessary information needed to use the established connection between the home network (5) and the first communication network (3) is sent by the gateway (1) over the first communication network (1) or the second communication network (7) to receiving means (10), which is connected to the first communication network (3) and/or to the second communication network (7) and which is available for the user.
 8. Method according to one of the preceding claims, **characterized in that** at least one of the steps of authenticating and of transmitting data to the gateway (1) is done by using a telephone as communication device.
 9. Method according to claim 8, **characterized in that** at least one of the steps of authenticating and transmitting data is done by using the key-pad of the telephone or by using the voice, and that the procedures of authenticating and transmitting data are controlled by an touch tone analysis means (8) or by a voice recognition means (8) included in the gateway (1).
 10. Method according to one of the preceding claims, **characterized in that** the gateway (1) dials-up to an Internet service provider for connecting the home network (5) via the gateway (1) to the Internet as the first communication network (3), if a corresponding command is included in the data transferred from the communication device to the gateway (1).
 11. Method according to one of claims 7 to 10, **characterized in that** the necessary information is sent in form of an e-mail, a SMS or a fax to the receiving means (10), which is a e-mailbox, a SMS-enabled device or a fax.
 12. Method according to one of the preceding claims, **characterized in that** the communication device is both used as communication device and as receiving means (10).
 13. Method according to one of the preceding claims, **characterized in that** the gateway (1) disconnects itself automatically from the first communication network (3) by breaking down the established connection after a predetermined period of time if the established connection is not used within this period of time.
 14. Gateway (1) for connecting a user to a home network via a first communication network (3) available for the user, the gateway (1) comprising a first connecting means (2) connecting the gateway (1) to the first communication network (3), and a second connecting means (4) connecting the gateway (1) to the home network (5), **characterized by** further comprising
 - a third connecting means (6), connecting the gateway (1) to a second communication network (7) available for the user,
 - processing means (8) for processing data received by the third connecting means (6) via the second communication network (7), and
 - connection control means (9) for establishing a connection between the home network (5) and the first communication network (3) via the first and the second connecting means (2, 4).
 15. Gateway (1) according to claim 14, **characterized in that** the processing means (8) comprises a touch

tone analysis means or a voice recognition means.

16. Gateway (1) according to claim 14 or 15, **characterized in that** the first and the third connecting means (2, 6) are condensed together into one single connecting means (11), which is preferably a modem or an ISDN-box, connecting the gateway (1) to the first and the second communication network (3, 7). 5
17. Gateway (1) according to one of the claims 14 to 16, **characterized by** a receiving means (10), which is connected to the gateway (1) via the first or the second communication network (3, 7) and reachable for the user, for receiving information sent by the gateway (1) over the first or the second communication network (3, 7). 10 15
18. Gateway (1) according to claim 17, **characterized in that** the receiving means (10) is an e-mailbox, a SMS-enabled device or a fax. 20
19. Gateway (1) according to one of the claims 14 to 18, **characterized in that** the Internet is at least part of the first communication network (3). 25
20. Gateway (1) according to one of the claims 14 to 19, **characterized in that** a telephone network is at least part of the second communication network (7). 30
21. Gateway (1) according to one of the claims 14 to 20, **characterized in that** the first connecting means (2) comprises a modem or an ISDN-box.
22. Gateway (1) according to one of the claims 14 to 21, **characterized in that** the third connecting means (6) comprises a modem or an ISDN-box. 35

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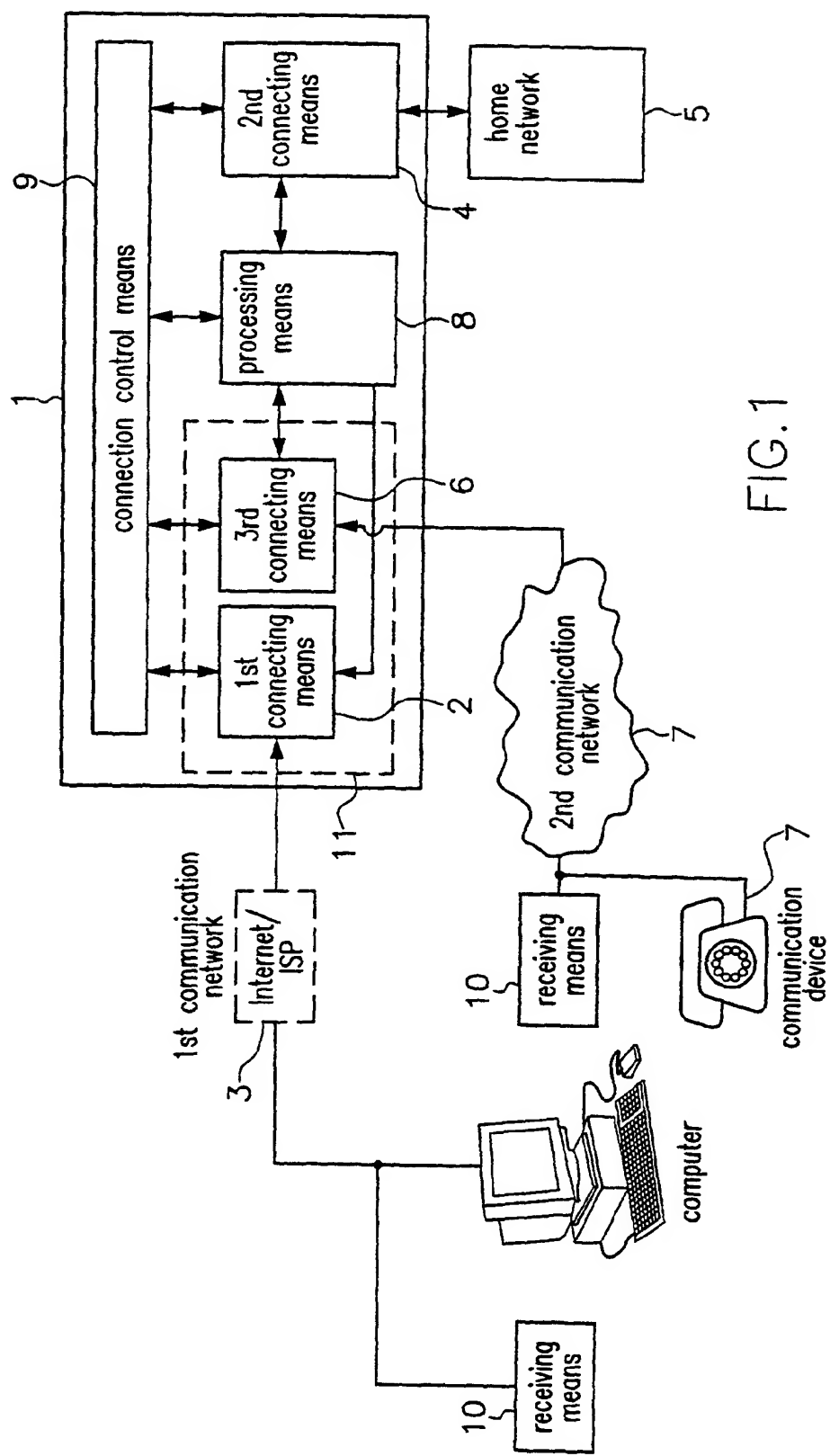


FIG. 1



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 00 11 5588

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 6 February 2001	Examiner Lai, C
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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